

Canada and coal at COP22

Tracking global momentum to end coal-fired power — and why Canada should lead the way

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Summary

Sub-national governments have led the way on coal phase-out in Canada: with Ontario's completed coal phase-out in 2014 and Alberta's target for eliminating coal emissions by 2030, the provinces have made significant progress on decarbonizing the electricity grid. At the same time, Canada has not yet taken action to enhance its existing regulation for coal-fired power electricity, by which it can secure the additional health, climate and economic benefits of an ambitious national phase-out. As Canada seeks to live up to the re-energized reputation on global climate leadership it established at the Paris climate conference in 2015, opportunities for the Trudeau government to lead by example by accelerating the phase-out of coal in the national energy mix remain to be seized. Globally, while some regions have plans for continued build-out of coal generation, the trend in OECD countries has been away from this antiquated commodity. This widely recognized phenomenon unites jurisdictions across the globe and actors across the energy system, including governments, utilities, and banks. As a developed nation and Party to the Paris Agreement, Canada should immediately operationalize its international legal commitment to long-term, deep decarbonization with a national strategy to accelerate the phase out coal-fired electricity. In planning for a coal phase-out now, Canada will place itself at the forefront of a structural shift that is already occurring—helping it to avoid the high potential costs and stranded assets that would result from a policy orientation that is reactive to, rather than ahead of, world trends.

1. Aligning Canada's policies with deep decarbonization

At this time of this paper's release, Canada is entering the second week of negotiations at the 22nd Conference of the Parties (COP22) to the United Nations Framework Convention on Climate Change (UNFCCC) in Marrakesh, Morocco. This meeting also serves as the first official Meeting of the Parties to the landmark Paris Agreement (CMA1).¹ The fact that the CMA1 meeting is occurring at COP22 was not a foregone conclusion: it was only clear that it would occur once enough countries, each having individually achieved ratification, collectively passed

¹ In United Nations bureaucratese, this meeting is known as CMA1, which happens concurrently with COP22 and a number of other related international governance processes.

the procedural threshold² established in Paris for the Agreement to come into force. That they have done so at near record speed is testament to the sense of global momentum and opportunity that states, businesses, and communities now see in striving for ambitious climate policy. It also reflects common understanding of the urgency of the need to steer domestic economies away from a reliance on fossil fuels.

As national delegates to COP22 negotiate the specifics of implementing the Paris Agreement, an immediate priority for the representatives of developed nations is to promote and commit to actions in line with their Nationally Determined Contributions (NDCs) to global mitigation efforts. In Canada, this target consists of a 30% reduction (equalling a level of 524 Mt) in greenhouse gas (GHG) emissions relative to the level in 2005 (747 Mt). The Minister of the Environment and Climate Change, Catherine McKenna, originally adopted this target as a “floor” established by the previous government. However, both government estimates³ and the latest research⁴ show a significant gap remaining in Canada’s ability to meet even this emissions reduction obligation — even when accounting for all federal, provincial, and territorial climate policy efforts (announced and implemented) to date.⁵

In the effort to have Canada meet or exceed its 2030 target, and to make true progress on the path to a low-carbon future, a coal phase-out is an obvious first step. A clean electricity grid is foundational to any credible, long-term strategy of deep decarbonization, making an accelerated phase-out of coal-fired plants a policy necessity. Regardless of its type or quality, coal has the highest carbon emissions intensity of any fossil fuel. It accounts for over 70% of national electricity sector emissions, while only producing 10% of electricity nationally.⁶ On a global scale, coal is the largest contributor to anthropogenic carbon dioxide emissions from fossil fuels.⁷

² As per Article 21 of the Paris Agreement, 55 countries represting 55% of global greenhouse gas emissions had to complete the domestic processes necessary to submit their “instruments of ratification” to the UN Secretary-General; entry into force would occur thirty days subsequent to the passing of this threshold. In this way, the Paris Agreement officially came into force on November 4th, 2016, and became one of the fastest multilateral accords ever concluded in the history of the United Nations to have achieved the status of international law.

³ Environment and Climate Change Canada, *Canada's Second Biennial Report on Climate Change*, Section 5: Projections. <https://www.ec.gc.ca/GES-GHG/default.asp?lang=En&n=02D095CB-1 - BR-Sec5>

⁴ Dave Sawyer and Chris Bataille, *Still Minding the Gap: An Assessment of Canada’s Greenhouse Gas Reduction Obligations* (Deep Decarbonization Pathways Project, 2016). <http://climateactionnetwork-28b0.kxcdn.com/wp-content/uploads/2016/04/Still-Minding-the-Gap-V10.1-1.pdf>

⁵ Pembina Institute, *Building a Pan-Canadian Climate Plan: Policy options to meet or exceed Canada’s 2030 emissions target*, Submission to the federal-provincial-territorial climate change working groups (June 2016). <https://www.pembina.org/reports/submission-pan-canadian-climate-change-working-groups.pdf>

⁶ Environment and Climate Change Canada, *National Inventory Report 1990-2014: Greenhouse Gas Sources and Sinks in Canada* (2016) Part 3, Table A13-1.

http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/9492.php

⁷ Corinne Le Quéré, Robbie M. Andrew, Josep G. Canadell, et al., “Global Carbon Budget 2016,” *Earth Syst. Sci. Data*, 8 (2016): 627.

In this context, and in the context of uncertainty created by the results of the recent U.S. presidential election, the world is looking to western countries like Canada for bold climate leadership. With the prospect of a U.S. administration hostile or indifferent towards the Paris Agreement, the importance of providing the international community with a North American model of commitment cannot be overstated.

2. Reconciling global ambition and domestic policy action

Recent research into the compatibility of coal-fired power with global carbon budgets that are aligned with the 2°C temperature target established at COP16 in Cancún in 2010 (and the 1.5°C aspirational goal set in Paris last year) shows that there is no room for unabated coal power (i.e. units not equipped with carbon capture and storage, or CCS, technology) beyond 2050 (see Figure 1).⁸

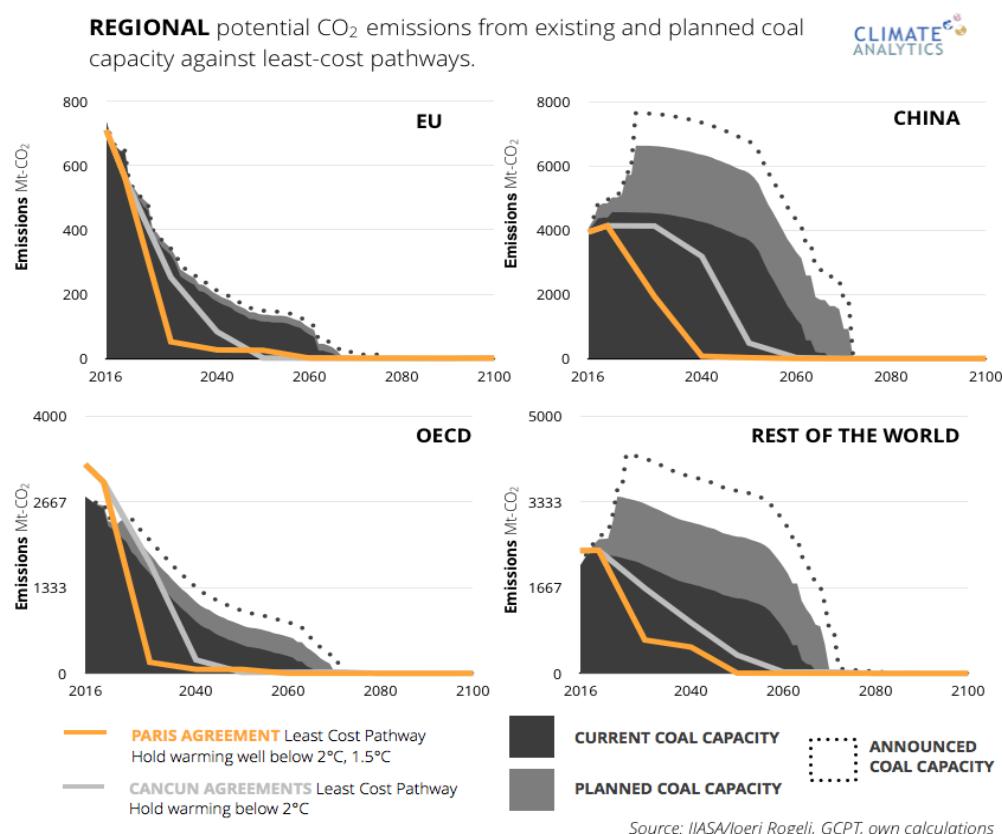


Figure 1. Regional potential coal emissions versus temperature target-consistent pathways

Data source: International Institute for Applied Systems Analysis, Global Coal Plant Tracker, Climate Analytics (November 2016).⁹

⁸ Marcia Rocha, Bill Hare, Paola Parra, Niklas Roming, Ugur Ural, Andrzej Ancygier, Jasmin Cantzler, Fabio Sferra, Howard Li, Michiel Schaeffe, *Implications of the Paris Agreement for coal use in the power sector*, Climate Analytics (November 2016). http://climateanalytics.org/files/climateanalytics-coalreport_nov2016_1.pdf

⁹ Ibid., 12.

Different Integrated Assessment Models (IAMs) of the global climate and economy yield broadly consistent results showing that, under a least-cost scenario, the EU and OECD must eliminate coal power by 2030, with the rest of the world pursuing the same shift in the two decades following.¹⁰

Worryingly, this research also shows an enormous “coal gap” between what good faith interpretation of the Paris Agreement targets will sanction in terms of emissions and what global business-as-usual emissions scenarios (accounting for the continuation and planned expansion of coal generation under current policies) predict. This conclusion draws on the latest update to the Global Coal Plant Tracker database, which collects data on every known coal-fired power generation unit, including location, operating/permitting status, investor, capacity, combustion technology and fuel, year of opening, and planned retirement.¹¹

In addition to the possibility that planned coal plants may end up as stranded assets due to a changing policy landscape, there is also substantial risk stemming from the reliance of climate-energy models on negative emissions technologies (NETs), such as bioenergy and CCS, that have not yet proven economic. To maintain a 50% probability of staying within 1.5°C of warming this century and an 85% probability of remaining below 2°C, all major models rely on yet-unproven negative emissions technologies to remove substantial amounts of carbon dioxide from the atmosphere.¹² If such technology proves in the long term to be unavailable or uneconomic, even steeper emissions reductions would be required of all nations before mid-century.

Delays in the mitigation of emissions from coal-fired power would increase the overall cost of mitigation and undermine the probability of limiting warming to the internationally agreed-upon level. It would also increase our reliance on negative emissions in the future—that is, on emissions reductions opportunities that, today, are mostly theoretical.¹³ By contrast, earlier substitution of coal for alternative power yields less need to rely on NETs in the second half of the century, decreases the potential environmental, social, and political costs of their implementation, and hedges against the risk that NETs will fail to deliver reductions at the scale the models currently imply is possible.¹⁴

¹⁰ The IAMs yielding these consistent results (albeit via different pathways) include the International Energy Agency’s World Energy Model, IRENA, and Greenpeace Revolution. See *ibid.*

¹¹ Christine Shearer, Nicole Ghio, Lauri Myllyvirta, Aiqun Yu, and Ted Nace. *Boom and Bust 2016: Tracking the Global Coal Plant Pipeline*, CoalSwarm, Sierra Club, and Greenpeace (March 2016). See EndCoal.org., *Global Coal Plant Tracker*. <http://endcoal.org/global-coal-plant-tracker/>

¹² Rocha et al., *Implications of the Paris Agreement for coal use in the power sector*, Climate Analytics (2016), 6.

¹³ *Ibid.*, 25.

¹⁴ *Ibid.*, 7.

Recognition of these complex dynamics, and of the dangerousness of exceeding even 1.5°C in average global warming, is now widespread. On the basis of equity and sustainable development considerations, including absolute annual emissions and cumulative historical emissions, developed nations are recognizing their responsibility to lead and facilitate the global response to a warming world. As a result, the beginnings of a wholesale rejection of coal has taken hold among nearly all G7 countries. Since 2010, the industry's story in these nations has predominantly been one of cancellations and retirement, with over 67 GW of planned coal generation capacity having been scrapped and over 165 GW of existing plants having completed or begun the decommissioning process.¹⁵ Where coal plant retirements or outright cancellations have not been announced, there has been increasing public pressure to push policy in these directions.¹⁶

3. The transition away from coal-fired power is happening now

Across the world, important players who once supported the growth of the coal industry are recognizing its end. “There are always going to be periods of boom and bust,” says Chiza Vitta, a metals and mining analyst with the credit rating firm Standard & Poor’s. “But what is happening in coal is a downward shift that is permanent.”¹⁷ In 2015, the International Energy Agency sounded an additional alarm for the coal industry: “The momentum behind coal’s surge is ebbing away—and the fuel faces a reversal of fortune.”¹⁸ This assessment includes both metallurgical or coking coal (used for steel production) as well as thermal coal (used for electricity generation).

While Article 2 of the Paris Agreement sets the important goal of keeping the increase in global average temperature to “well below” 2°C, there are other compelling incentives to move away from carbon-intensive, coal-based energy. Around the world, these include the low price of natural gas (a direct competitor to coal power), the falling price of wind and solar technologies, increasingly stringent climate policies, and greater regulatory requirements for pollutants such as mercury, nitrogen oxides, and sulphur oxides. In addition, utilities are seeking sustainable business practices to enhance shareholder value and to minimize costs for rate payers. Financiers are seeking sensible investment opportunities. Governments are seeking to ensure

¹⁵ The sole exception in this regard is Japan, which currently has plans to expand unabated coal capacity. Chris Littlecott, “UK Coal Phase Out: The International Context,” *E3G Briefing Paper*, November 2016. <https://www.e3g.org/library/uk-to-move-beyond-coal-by-2025>

¹⁶ For instance, the Kiko Network, a Japanese environmental NGO, recently launched a database called the Japan Coal Plant Tracker to follow the country’s roughly 48 newly proposed coal units. The database collects information about each plant’s current status (in terms of planning, construction, or operation) as a tool for civic resistance. See <http://sekitan.jp/plant-map> and <http://www.kikonet.org/eng/press-release-en/2015-11-24/sekitanmap-release>

¹⁷ Michael Corkery, “As Coal’s Future Grows Murkier, Banks Pull Financing,” *The New York Times*, March 20, 2016. <http://www.nytimes.com/2016/03/21/business/dealbook/as-coals-future-grows-murkier-banks-pull-financing.html>

¹⁸ International Energy Agency, *World Energy Outlook 2015*. <http://www.worldenergyoutlook.org/weo2015/>

the long-term reliability of electricity infrastructure that is low-cost and safe for public health. Major decision-makers are developing and implementing transition plans built around alternative energy sources, and abandoning policies that prop up coal-fired power through artificial subsidies.¹⁹

3.1 Financiers

A growing list of major banks, including Bank of America, JPMorgan Chase, Citigroup, and Morgan Stanley are stepping away from coal.²⁰ While some of them are motivated to reduce the environmental footprint of their assets, many simply view coal as a risky investment.

JPMorgan Chase has decided to stop directly financing all new coal mines and new coal power plants in developed countries, and explained its motivations thus: “We believe the financial services sector has an important role to play as governments implement policies to combat climate change.”²¹

In a new coal policy introduced in 2015, Bank of America offers various reasons for reducing its exposure to coal mining companies: “With regulatory pressure related to both extraction and combustion, changes in economic conditions, and increased pricing pressure due to the proliferation of natural gas and new energy technologies, the dynamics around coal are shifting. Energy companies and their subsidiaries that are focused on coal are currently the most exposed to these changes.”²²

These risks, along with reduction in demand for metallurgical coal, are already resulting in bankruptcies among major coal companies, including Peabody Energy, the world’s largest private coal mining company, in April 2016.²³

The investment decisions by these banks are also reflected in worldwide trends. Globally, the investment in fossil fuel power, including coal and gas, has been half that of renewables (see

¹⁹ The Pembina Institute has detailed the challenges with subsidizing coal to capture its carbon emissions. Benjamin Thibault and Duncan Kenyon, “Fact checking the coal industry’s “information meetings” (Part 2),” *Pembina Institute*, March 4, 2016. <http://www.pembina.org/blog/fact-checking-the-coal-industries-information-meetings-part-2>

²⁰ Michael Corkery, “As Coal’s Future Grows Murkier, Banks Pull Financing,” *The New York Times*, March 20, 2016. <http://www.nytimes.com/2016/03/21/business/dealbook/as-coals-future-grows-murkier-banks-pull-financing.html>

²¹ JPMorgan Chase & Co, *Environmental and Social Policy Framework*. <https://www.jpmorganchase.com/corporate/Corporate-Responsibility/document/jpmc-environmental-and-social-policy-framework.pdf>

²² Bank of America, *Bank of America Coal Policy*. 2015. http://about.bankofamerica.com/assets/pdf/COAL_POLICY.pdf See also: Bank of America Corporation, *2015 Business Standards Report and Environmental, Social and Governance Addendum: How we live our purpose*, 84–85. <http://about.bankofamerica.com/assets/pdf/Bank-of-America-2015-ESG-Report.pdf>

²³ Chris Mooney and Steven Mufson, “How coal titan Peabody, the world’s largest, fell into bankruptcy”, *The Washington Post*, April 13, 2016. https://www.washingtonpost.com/news/energy-environment/wp/2016/04/13/coal-titan-peabody-energy-files-for-bankruptcy/?utm_term=.7a52d76fe326

Figure 2). Bloomberg's New Energy Outlook 2016 predicts \$1.2 trillion of investment into new coal-burning capacity by 2040, while \$7.8 trillion will be invested in renewables.²⁴

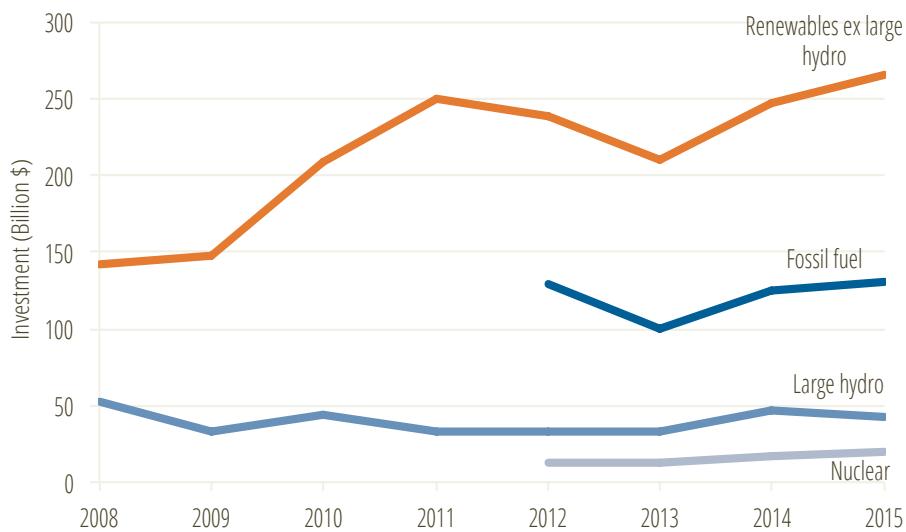


Figure 2. World-wide investment in fossil fuel (including coal and gas) power capacity has been half that in renewables

Data source: UNEP and Bloomberg²⁵

3.2 Utilities

Several large utilities, both private and state-owned, have come to the same conclusion as the finance industry, and are also stepping away from coal.

In 2015, U.S. utilities closed several plants ahead of schedule, resulting in faster shutdown than originally anticipated. In fact, the ten largest companies that are retiring coal will be shutting down about 12 GW between 2015 and 2020²⁶—twice the coal generation capacity that exists in Alberta. Reasons cited for these closures include an inability to compete with cheap gas, low power prices, the cost of controls needed to meet air quality requirements, and further anticipated carbon regulations.

²⁴ Tom Randall, "Wind and Solar Are Crushing Fossil Fuels," *Bloomberg*, April 6, 2016.

<http://www.bloomberg.com/news/articles/2016-04-06/wind-and-solar-are-crushing-fossil-fuels>

²⁵ Frankfurt School – UNEP Collaborating Centre for Climate & Sustainable Energy Finance, *Global Trends in Renewable Energy Investment 2016*.

http://fs-unep-centre.org/sites/default/files/attachments/unep_gtr_data_file_19_april_2016.pdf

²⁶ Molly Christian and Neil Powell, "US coal unit retirements pick up ahead of gas conversions," *SNL Financial (S&P Global Market Intelligence)*, September 29, 2015. https://www.snl.com/InteractiveX/Article.aspx?cid=A-33957588-9259&mkt_tok=3RkMMJWWfF9wsRojvKvLcO%2FhmjTEU5z17+0lXKG1gIkz2EFye+LIHETpodcMSMJnPbHYDBceEjhqyQJxPr3FJNAlysRuRhDgCw==

For example, in June 2016, DTE Energy in Michigan announced it would be retiring eight coal units—which, along with three other retirements, totals almost 3 GW of coal capacity—by 2023. During the announcement, DTE Energy Chairman and CEO Gerry Anderson said, “The way DTE generates electricity will change as much in the next ten years as any other period in our history. We will replace 11 aging coal-fired generating units at three facilities built in the 1950s and 1960s with a mix of newer, more modern and cleaner sources of energy generation such as wind, natural gas and solar.”²⁷

3.3 Governments

At the sub-national level, Canada has much to be proud of on the coal file. In 2003 Ontario announced its intention to phase out its 7,560 megawatts (MW) of coal-fired capacity. At that time, coal-fired generation represented approximately 25% of Ontario’s total electricity capacity; in 2014, Ontario became coal-free.²⁸ More recently, Alberta has committed to phasing out provincial coal emissions by 2030, and to supporting the addition of 5,000 MW of renewable capacity to its electricity grid by 2030. This phase-out of coal, combined with the 30% renewable grid target, has revitalized Alberta’s renewables sector and is attracting businesses as well as investors into the province. Across Alberta, conversations are happening about how communities can gain various benefits from building renewables in their area—benefits that were not available to them under an energy system premised on centralized coal generation.

Alberta and Ontario, while leaders in Canada, are not the first governments and will not be the last to announce a coal phase-out. Accelerated coal power retirements are proliferating and are being proposed or backed by parties across the OECD and across the political spectrum.

In March 2016, Oregon Governor Kate Brown signed into law the Clean Electricity and Coal Transition Act to phase out coal by 2030.²⁹ The law has the support of both the Republican and Democratic parties, the state’s two largest utilities, consumer advocates and environmental groups. In February 2016, New York Governor Andrew Cuomo pledged to shut down the state’s coal-fired plants or transition them to a cleaner fuel by 2020.³⁰ The governor will be working with plant owners and host communities to ensure that transition happens in a manner that

²⁷ Unit capacities from <http://www.sourcewatch.org>.

²⁸ Melissa Harris, Marisa Beck, Ivetta Gerasimchuk, *The End of Coal: Ontario’s coal phase-out*, IISD Report, International Institute for Sustainable Development (June 2015), 10.

²⁹ Elizabeth Daigneau, “Oregon’s Anti-Coal Law Could Have Far-Reaching Effects,” *Governing*, March 21, 2016. <http://www.governing.com/topics/transportation-infrastructure/gov-oregon-coal-law-west.html>

³⁰ New York State, “Governor Cuomo Outlines 2016 Agenda: Signature Proposals Ensuring That New York Is – And Will Continue to Be – Built to Lead,” January 13, 2016. <https://www.governor.ny.gov/news/governor-cuomo-outlines-2016-agenda-signature-proposals-ensuring-new-york-and-will-continue-be>

preserves jobs or retrains “current employees for new jobs in New York’s clean energy economy”³¹

At the end of 2015, U.K. Energy and Climate Change Secretary Amber Rudd announced a phase-out of unabated coal by 2025: “It cannot be satisfactory for an advanced economy like the U.K. to be relying on polluting, carbon-intensive, fifty-year-old coal-fired power stations...This is not the future. We need to build a new energy infrastructure, fit for the 21st century.”³² The goal had the support of all major parties, and the UK has since moved towards implementation by releasing proposals discussing policy options for achieving it.³³ In Scotland, the March 2016 closure of the Logannet power station made the country’s generation supply officially coal-free. Other governments in Belgium, Cyprus, and Luxembourg have also become coal-free by taking a similar plant-by-plant approach.

Meanwhile, Austria, Ireland, Israel, New Zealand, Portugal, and Sweden have only one or two coal power plants continuing to operate, Finland and Denmark have committed to ending coal generation by 2030, and Spain and the Netherlands have closed plants without yet having developed a comprehensive closure schedule for the industry.³⁴

3.4 Private sector

In Alberta, the Canadian province currently with the most active coal phase-out policy, the conversation follows the global one. Private companies are joining the health³⁵ and environmental sectors in recognizing that coal has to go.

For instance, in their submissions to Alberta’s 2015 Climate Change Advisory Panel/Climate Leadership Discussions, both Epcor, a water and electricity utility, and TransCanada, a pipeline company, recommended some form of transition away from coal by 2030. More dramatically, a number of companies are jettisoning their coal assets entirely:

³¹ New York State, Governor Andrew Cuomo, *Built to Lead: 2016 State of the State* (January 13, 2016), 131. https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/2016_State_of_the_State_Book.pdf

³² “UK’s coal plants to be phased out within 10 years,” *BBC News*, November 18, 2015. <http://www.bbc.com/news/business-34851718>

³³ The proposed policy measures were intended to provide the basis for consultations to occur in spring 2016, but these were delayed as a result of changes to the British political leadership in the wake of the EU referendum. Cited in Littlecott, “UK Coal Phase Out,” *E3G*, fn. 4. See Department for Business, Energy, & Industrial Strategy, “Coal generation in Great Britain: The pathway to a low-carbon future” (November 9, 2016). <https://www.gov.uk/government/consultations/coal-generation-in-great-britain-the-pathway-to-a-low-carbon-future>

³⁴ Littlecott, “UK Coal Phase Out: The International Context,” *E3G*, 1.

³⁵ Joe Vipond and Kim Perrotta, “Opinion: Coal phase-out equals improved health for Albertans,” *Edmonton Journal*, November 9, 2015. <http://edmontonjournal.com/opinion/columnists/opinion-coal-phase-out-equals-improved-health-for-albertans>

- Maxim Power suspended generation at the H.R. Milner generating station in March 2016, citing “record low Alberta power prices, which have undermined profitability for a prolonged period.”³⁶ The plant had been in operation for 44 years, so this shutdown is well ahead of the federal government’s 50-year end-of-life estimation for coal units.³⁷
- Owners of coal plant Power Purchase Arrangements (PPAs), including Enmax³⁸, TransCanada³⁹, Altagas⁴⁰ and Capital Power⁴¹, are terminating their contracts, citing unprofitability given the low power pool prices in Alberta.⁴²
- Canadian Utilities, an ATCO Ltd. company, has not built a coal-fired power plant since the 1980s for fear of stranding assets.⁴³ President and CEO, Siegfried Kiefer, says, “I do see the writing on the wall for coal-fired electricity in most of the developed world, as likely to be coming to an end.”⁴⁴

These companies are reducing their coal liabilities while exploring investment options in cleaner sources of energy.

The paradox of waxing coal and waning interest

While coal is being phased out in several jurisdictions, many governments and utilities are still planning to build new coal plants. However, even in such places, “utilization rates,” or the amount of electricity actually generated from coal plants, has declined for two years in a row.⁴⁵

³⁶ Maxim Power Corp, “Maxim Power Corp. Announces 2015 Financial and Operating Result,” media release, March 28, 2016. <http://maximpowercorp.mwnewsroom.com/press-releases/maxim-power-corp-announces-2015-financial-and-operating-results-tsx-mxg-201603281048385001>

³⁷ Ben Thibault, “Pembina reacts to Milner suspension of generation,” *Pembina Institute*, March 29, 2016. <https://www.pembina.org/media-release/pembina-reacts-to-milner-suspension-of-generation>

³⁸ ENMAX, “ENMAX Terminates Keehlhills Power Purchase Arrangement,” May 6, 2016. <https://www.enmax.com/news-events/news/enmax-terminates-keephillips-ppa>

³⁹ TransCanada, “TransCanada to Terminate Alberta Power Purchase Arrangements,” Media Release, March 7, 2016. <http://www.transcanada.com/announcements-article.html?id=2031816&t>

⁴⁰ Geoffrey Morgan, “Alberta coal power contracts terminated as natural gas prices plunge,” *Financial Post*, March 7, 2016. http://business.financialpost.com/news/energy/transcanada-corp-to-terminate-coal-power-contracts-due-to-higher-emissions-costs?_lsa=ba3c-fcb8

⁴¹ Capital Power, “Capital Power terminates Sundance C Power Purchase Arrangement,” Media Release, March 24, 2016. <http://www.capitalpower.com/MediaRoom/newsreleases/2016/Pages/24-03-2016.aspx>

⁴² Ben Thibault, “Can you blame a straw for breaking the camel’s back?” *Pembina Institute*, April 6, 2016. <http://www.pembina.org/blog/can-you-blame-a-straw-for-breaking-camel-s-back>

⁴³ Geoffrey Morgan, “Alberta utility firms brace for early phase out of coal under Notley’s climate change policies,” *Financial Post*, November 12, 2015. http://business.financialpost.com/news/energy/alberta-utility-firms-brace-for-early-phase-out-of-coal-under-notleys-climate-change-policies?_lsa=465f-6b51

⁴⁴ Kelly Cryderman and Brent Jang, “The Coal Bust,” *The Globe and Mail*, December 11, 2015. <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/how-the-collapse-of-coal-is-hitting-home-in-westerncanada/article27731329/>

⁴⁵ Rocha et al., *Implications of the Paris Agreement for coal use in the power sector*, Climate Analytics (2016), ii, 11.

In China, a shift in permitting from central authority to the provinces has led to a greater number of coal plants being built. The central government recognizes the problem and is reportedly moving to order some regions to suspend approvals. Generation from coal has already plateaued, and coal capacity is expected to decline by 30-50% by 2050,⁴⁶ while renewable capacity is projected to increase by 50-70%. Chinese coal production itself has dropped by 15.5% since 2015, and is “well past ‘peak coal.’”⁴⁷ In the face of growing pressure from environmental groups and increasingly poor economics, it is likely that at least some of the proposed coal projects may never go forward.

Developers of projects that do go ahead, meanwhile, may find themselves dealing with a significant stranded asset problem as competition with other power sources and oncoming government regulations make coal-generating units uneconomic earlier in their lifetime.

It is important to distinguish the use of coal power in developed countries from its use in developing countries. As they work to increase the extent of their electricity networks, some developing countries do not expect to reach peak coal power for several years or even decades; by contrast, most developed countries have century-old electricity networks. Yet coal power in developing countries still faces internal resistance from local stakeholders and environmental groups, as well as competition from fast-growing renewables that can more reliably deliver electricity to both rural regions and cities with unreliable grids.

4. The end of an era

With steadily diminishing prices for renewable sources, structural shift in the global energy system is now well under way. Countries at the forefront of this transition will strengthen their ability to adapt to climate change, in addition to their geopolitical position vis-à-vis energy security. At the same time, they will be laying the groundwork for an equitable transition for affected workers, communities, and regions, and offering an example to other nations of the importance of genuine participation in the international framework for achieving emissions reductions, as conceived in the Paris Agreement.

Ontario’s full phase-out of coal-fired power and Alberta’s commitment to a coal phase-out by 2030 has generated momentum internationally and is helping Canada regain credibility in global climate and energy discussions. In fact, a national conversation is taking shape as Canadians explore how we as a country can move away from the harmful effects of coal-fired

⁴⁶ Ni Weidou, “Energy and Advanced Coal Utilization Strategy in China,” Tsinghua University. http://gcep.stanford.edu/pdfs/RxsY3908kaqwVPacX9DLcQ/niweidou_coal_mar05.pdf

⁴⁷ Tim Buckley, “15.5% Drop in China Coal Production Shows Transition Gaining Speed,” *Institute for Energy Economics and Financial Analysis*, June 13, 2016. <http://ieefa.org/ieefa-note-15-5-drop-china-coal-production-shows-transition-gaining-speed/>

power generation. Having completed its coal phase-out in 2014, Ontario (along with other jurisdictions that have reached a similar stage) expects several co-benefits in terms of reduced healthcare costs, air pollution, and productivity.⁴⁸ For example, Toronto is already seeing a decrease in smog days.⁴⁹ Since establishing an accelerated schedule for a national coal-phase out merely requires an extension to existing regulations issued under the *Canadian Environmental Protection Act* (CEPA), Canada possesses a clear legislative route for implementing a phased transition from coal. The Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations should be used to lower, on a plant-by-plant basis, the current 50-year lifetime limit on unabated coal power facilities.⁵⁰ The existing regulations are also flexible in providing for the possibility of equivalency agreements (where provinces can achieve equivalent emissions reductions through other policies or in other sectors) between the federal and provincial governments.

Coal power contributed over 8% of Canada's total GHG emissions in 2014 (732 Mt), and is the source of over 70% of emissions in the electricity sector.⁵¹ If Canada works seriously to reduce this figure to zero, it will be joining a global shift that is already underway. At the same time, the current climate negotiations in Marrakesh present Canada with a platform to accelerate the international momentum of coal phase-out policies, and so to position itself as a strong North American voice for climate change mitigation. Through declaration of its own commitment to a domestic phase-out schedule and a zero-emitting electrical grid, Canada can highlight its intention to honour the Paris Agreement, and renew its diplomatic standing with respect to the UNFCCC. By phasing out coal nationally, the Canadian government can show it recognizes that credible climate strategies are those that plan for 2050 and beyond. The opportunity is one that remains within reach, but that the government has yet to grasp.

⁴⁸ Benjamin Israël, Kim Perrotta, Joe Vipond, Leigh Allard, and Vanessa Foran, *Breathing in the Benefits: How an accelerated coal phase-out can reduce health impacts and costs to Albertans*, The Pembina Institute, The Asthma Society of Canada, The Canadian Association of Physicians for the Environment, and The Lung Association, Alberta & Northwest Territories (September 2016). <https://www.pembina.org/reports/breathing-in-the-benefits-report.pdf>

⁴⁹ Antonella Artuso, "The heat's been on – but the smog has not," *Toronto Sun*, August 21, 2016. <http://www.torontosun.com/2016/08/21/the-heats-been-on---but-the-smog-has-not>

⁵⁰ In general, the policy should aim to reduce expected plant life by a decade or more. This action should be complemented by an update to the stringency of the emissions performance standard (known colloquially as "good-as-gas") faced by plants that wish to operate beyond the lifetime limit, since the current standard (420 t/GWh) does not reflect recent efficiency gains in natural gas-fired power, the average emissions intensity of which is now at least 375 t/GWh. See Pembina Institute, *Building a Pan-Canadian Climate Plan*, 14-15.

⁵¹ National Inventory Report 2016, Part 3, Table A13-1.